REMARKS

The Office Action dated February 4, 2005, has been received and carefully noted. The amendments made herein and the following remarks are submitted as a full and complete response thereto.

Claims 1-14 are pending in the present application and are respectfully submitted for consideration.

Allowable Subject Matter

As preliminary matter, Applicant appreciates the indication of allowable subject matter recited in claims 4 and 12, and that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1-3, 5-11 and 13-14 Rejected under 35 U.S.C. §103(a)

Claims 1-3, 5-11 and 13-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Assar et al. (U.S. Patent No. 5,485,595, hereinafter "Assar"). Applicant respectfully traverses the rejection and submits that each of claims 1-3, 5-11 and 13-14 recite subject matter that is neither disclosed nor suggested by the cited prior art.

Claim 1 recites a nonvolatile semiconductor memory comprising, among other things, a sub-memory cell array wherein, in case of a rewrite operation rewriting a portion of data written in the main memory cell array, a modification data is written into the sub-memory cell array without erasing said main memory cell array, and correspondent information on a first address of the main memory cell array storing a

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data to be modified and a second address of the sub-memory cell array storing the modification data is recorded in the address memory.

Claim 9 recites a nonvolatile semiconductor memory comprising, among other things, a sub-memory cell array in which, at the time of a rewrite operation modifying a portion of the first data written in the main memory cell array into a second data, said modifying second data is written; and an address memory which stores correspondent information on a first address of the main memory cell array storing a data to be modified and a second address of the sub-memory cell array storing the second data, when said second data is written into the sub-memory cell array.

It is respectfully submitted that the prior art fails to disclose or suggest at least the above-mentioned features of the Applicants' invention.

In making the rejection, the Office Action characterized Assar as allegedly "showing a non-volatile memory cell array (100) having a plurality of blocks (0-N), and the use of a separated CAM memory (106) as claimed 'address memory' for holding the address translation information between a logical address (file 308) and physical address (408) to be used in accessing the corresponding information inside the memory array (100)." The Office Action further took the position that "it would have been obvious to one skilled in this art that, in case of a rewrite operation is needed, a modification data is written into a new location (983) of the array (100) instead of using the old location (728)."

Applicant respectfully disagrees with the Office Action's characterization of Assar.

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Assar merely discloses a non-volatile content addressable memory (CAM) 106 that is associated with the memory storage 100. The CAM 106 is formed of FLASH memory or can also be EEPROM. There is one entry in the CAM 106 for every one of the N blocks in the mass storage 100. Each entry includes a number of fields. The CAM 106 is also formed of a non-volatile memory because loss of its information would make retrieval of the data files stored in the mass storage 100 impossible.

The logical address 308 portion of the map 108 and the flags 112, 116 and 118 form part of the CAM 106. It is not necessary that the physical address 408 portion of the map 108 form part of the CAM. Indeed, the physical address 408 portion of the map 108 can be ordinary FLASH memory, EEPROM or even ROM.

Assar further discloses, as an example, that a user is preparing a word processing document and instructs the computer to save the document. The document will be stored in the mass storage system as shown in FIG. 1. The computer system will assign it a logical address 308, for example 526 H. The mass storage system will select a physical address 408 of an unused block or blocks in the mass storage 100 for storing the document, e.g. 728 H. That map correlating the logical address 308 to the physical address 408 is stored in the CAM 106. As the data is programmed, the system of the previous solution also sets the used/free flag 112 to indicate that this block has been written without being erased. The used/free flag 112 also forms a portion of the CAM 106. One used/free flag 112 is provided for each entry of the CAM 106.

Further regarding Assar's example, the user retrieves the document, makes a change and again instructs the computer to store the document. To avoid an erase-before-write cycle, the system provides means for locating a block having its used/free

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flag 112 unset (not programmed) which indicates that the associated block is erased. The system then sets the used/free flag for the new block 114 (FIG. 2) and then stores the modified document in that new block 114. Next, the system sets the old/new flag 116 of the previous version of the document indicating that this is an old unneeded version of the document. Lastly, the system updates the correlation between the logical address 308 and the actual physical address 408. In this way, the system avoids the overhead of an erase cycle which is required in the erase-before-write of conventional systems to store a modified version of a previous document.

Applicants submit that Assar fails to disclose or suggest each and every element recited in claims 1 and 9 of the present application. In particular, it is submitted that Assar merely discloses a memory storage 100 associated with addressable memory (CAM) 106, but does not show "a sub-memory cell array" as provided in the present invention. Furthermore, Assar merely stores the entire modified document in the memory storage 100 rather than storing only the "modification data" in the sub-memory cell array in accordance to the present invention. Also, the CAM 106 of Assar stores the correlating logical address 308 to the physical address 408, but does not store the correspondence between the first address of the main memory cell array and the second address of the sub-memory cell array in accordance with the present invention. Therefore, Applicant submits that Assar fails to disclose each and every element recited in claims 1 and 9 of the present application.

Moreover, to qualify as prior art under 35 U.S.C. §102, a single prior art reference must teach, i.e., identically describe, each feature of a rejected claim. As explained above, Assar fails to disclose or suggest each and every feature of claims 1

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and 9. Accordingly, Applicants respectfully submit that claims 1 and 9 are not anticipated by Assar. Therefore, Applicant respectfully submits that claims 1 and 9 are allowable.

As claims 2-3, 5-8, 10-11 and 13-14 are dependent from independent claims 1 and 9, respectively, Applicant submits that each of these claims incorporates the patentable aspects therein, and are therefore allowable for at least the reasons set forth above with respect to the independent claims, as well as for the additional subject matter recited therein.

Accordingly, Applicant respectfully requests withdrawal of the rejection.

Conclusion

In view of the above, Applicants respectfully submit that each of claims 1-14 recites subject matter that is neither disclosed nor suggested in the cited prior art. Applicants also submit that the subject matter is more than sufficient to render the claims non-obvious to a person of ordinary skill in the art, and therefore respectfully request that claims 1-14 be found allowable and that this application be passed to issue.

If for any reason, the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

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In the event this paper has not been timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300.

Respectfully submitted,

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